

Clark & Elbing LLP

101 Federal Street
Boston, MA 02110

Telephone 617-428-0200
Facsimile 617-428-7045
617-428-7046

Date: August 26, 2003

To: Attn: Examiner Bradley Sisson
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile No: (703) 872-9306

From: James D. DeCamp, Ph.D.

Re: Applicant: Keiya Ozawa et al.

Serial No.: 09/905,591

Filed: July 13, 2001

Title: GENE THAT IMPARTS SELECTIVE PROLIFERATIVE
ACTIVITY

Group Art Unit: 1634

Pages: 12, including this coversheet

FAX RECEIVED
AUG 27 2003
GROUP 1600

PATENT
ATTORNEY DOCKET NO. 50026/012004

Certificate of Facsimile
Date of Transmission: August 26, 2003

I hereby certify under 37 C.F.R. § 1.8(a) that this correspondence is being facsimile transmitted to Examiner Bradley Sisson at facsimile number (703) 872-9306 on the date indicated above.

Heidi Wright
Printed Name of Person Mailing Correspondence

[Signature]
Signature of person mailing correspondence

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Keiya Ozawa et al.	Art Unit:	1634
Serial No.:	09/905,591	Examiner:	Bradley L. Sisson
Filed:	July 13, 2001	Customer No.:	21559
Title:	GENE THAT IMPARTS SELECTIVE PROLIFERATIVE ACTIVITY		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FAX RECEIVED
AUG 27 2003
GROUP 1600

OFFICIAL

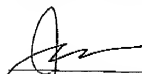
COMMUNICATION REGARDING
INFORMATION DISCLOSURE STATEMENT

Applicants draw the Examiner's attention to the Information Disclosure Statement ("IDS") and Form PTO-1449 mailed on July 13, 2001 (copies enclosed). A copy of the postcard indicating receipt of these materials on July 13, 2001 by the U.S. Patent and Trademark Office ("USPTO") is also enclosed. Applicants' file does not reflect that the Form PTO-1449 which accompanied this IDS statement was returned with an indication that the cited reference was considered by the USPTO.

Applicants respectfully request that the PTO-1449 form be returned to applicants with such indication.

Respectfully submitted,

Date: 26 AUGUST 2003


James D. DeCamp, Ph.D.
Reg. No. 43,580

Clark & Elbing LLP
101 Federal Street
Boston, MA 02110-2214
Telephone: 617-428-0200
Facsimile: 617-428-7045

****NEW US APPLICATION****

PATENT

ATTORNEY DOCKET NUMBER: 50026/012004

The U.S. PTO date stamp sets forth the date of receipt and serial number of new U.S. patent application:

Applicant: Kei-ya Ozawa et al.Title: GENE THAT IMPARTS SELECTIVE PROLIFERATIVE ACTIVITY

☒ Transmittal Pages: 2 ☐ Assignment & Cover Sheet Pages: _____
☒ Cover Sheet Pages: 1 ☐ Small Entity Statement Pages: 1
☒ Specification Pages: 15 ☒ Preliminary Amendment Pages: 2
☒ Claims Pages: 2 ☐ IDS Pages: 5
☒ Abstract Pages: 1 ☐ Cited References Number: _____
☒ Drawings Pages: 13 ☐ PTO Form 1449 Pages: 3
☒ Declaration/POA Pages: 3 ☐ Other Pages: _____
☒ Check \$: 355 ☐ Other Pages: _____

Atty/Secy: JDD/mpc

Client/Matter Name: _____

EXPRESS MAIL LABEL: EL714747361USDEPOSIT DATE: 7/13/01

PATENT
ATTORNEY DOCKET NO. 50026/012004

Certificate of Mailing	
Date of Deposit: <u>July 13, 2001</u>	Label Number: <u>EL 714747351US</u>
I hereby certify under 37 C.F.R. § 1.10 that this correspondence is being deposited with the United States Postal Service as "Express Mail Post Office to Addressee" with sufficient postage on the date indicated above and is addressed to: BOX PATENT APPLICATION, Commissioner for Patents, Washington, D.C. 20231.	
Guy Beardsley Printed Name of Person Mailing Correspondence	<i>Guy Beardsley</i> Signature of Person Mailing Correspondence

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Keiya Ozawa et al.	Art Unit:	
Serial No.:	To Be Assigned	Examiner:	
Filed:	July 13, 2001	Customer No.:	21559
Title:	GENE THAT IMPARTS SELECTIVE PROLIFERATIVE ACTIVITY		

Assistant Commissioner For Patents
Washington, DC 20231

INFORMATION DISCLOSURE STATEMENT

Under 35 U.S.C. § 120, this application relies on the earlier filing date of application serial number 09/142,305, filed on September 10, 1999. The following references were submitted to and/or cited by the Office in the prior application and, therefore, are not provided in this application:

Aki et al., "Identification and Characterization of Positive Regulatory Elements in the Human Glyceraldehyde 3-Phosphate Dehydrogenase Gene Promoter," *J. Biochem.* 122:271-278 (1997).

Avalos, "Molecular Analysis of the Granulocyte Colony-Stimulating Factor Receptor," *Blood* 81:1111-1119 (1993).

Berthois et al., "Phenol red in tissue culture media is a weak estrogen: Implications concerning the study of estrogen-responsive cells in culture," *Proc. Natl. Acad. Sci. USA* 83:2496-2500 (1986).

Blaese et al., "T Lymphocyte-Directed Gene Therapy for ADA-SCID: Initial Trial Results After 4 Years," *Science* 270:475-480 (1995).

Bordignon et al., "Gene Therapy in Peripheral Blood Lymphocytes and Bone Marrow for ADA-Immunodeficient Patients," *Science* 270:470-475 (1995).

Conneally et al., "Rapid and Efficient Selection of Human Hematopoietic Cells Expressing Murine Heat-Stable Antigen as an Indicator of Retroviral-Mediated Gene Transfer," *Blood* 87:456-464 (1996).

Danielian et al., "Identification of Residues in the Estrogen Receptor That Confer Differential Sensitivity to Estrogen and Hydroxytamoxifen," *Molecular Endocrinology* 7:232-240 (1993).

Dong et al., "Distinct Cytoplasmic Regions of the Human Granulocyte Colony-Stimulating Factor Receptor Involved in Induction of Proliferation and Maturation," *Molecular and Cellular Biology* 13:7774-7781 (1993).

Dunbar et al., "Gene Transfer into Hematopoietic Progenitor and Stem Cells: Progress and Problems," *Stem Cells* 12:563-576 (1994).

Fukunaga et al., "Growth and Differentiation Signals Mediated by Different Regions in the Cytoplasmic Domain of Granulocyte Colony-Stimulating Factor Receptor," *Cell* 74:1079-1087 (1993).

Fukunaga et al., "Functional domains of the granulocyte colony-stimulating factor receptor," *The EMBO Journal* 10:2855-2865 (1991).

Fukunaga et al., "Purification and Characterization of the Receptor for Murine Granulocyte Colony-stimulating Factor," *The Journal of Biological Chemistry* 265:14008-14015 (1990).

Gabbianelli et al., "Multi-Level Effects of flt3 Ligand on Human Hematopoiesis: Expression of Putative Stem Cells and Proliferation of Granulocytes."

Gossen et al., "Tight control of gene expression in mammalian cells by tetracycline-responsive promoters," *Proc. Natl. Acad. Sci. USA* 89:5547-5551 (1992).

Hanania et al., "Serial transplantation shows that early hematopoietic precursor cells are transduced by *MDR-1* retroviral vector in a mouse gene therapy model," *Cancer Gene Therapy* 1:21-25 (1994).

Haniu et al., "Extracellular Domain of Granulocyte-Colony Stimulating Factor Receptor," *Archives of Biochemistry and Biophysics* 324:344-356 (1995).

Hockenbery et al., "Bcl-2 Functions in an Antioxidant Pathway to Prevent Apoptosis," *Cell* 75:241-251 (1993).

Hollenberg et al., "Use of a conditional MyoD transcription factor in studies of MyoD trans-activation and muscle determination," *Proc. Natl. Acad. Sci. USA* 90:8028-8032 (1993).

Hope et al., "trans-Dominant Inhibition of Human Immunodeficiency Virus Type 1 Rev Occurs through Formation of Inactive Protein Complexes," *Journal of Virology* 66:1849-1855 (1992).

Hudak et al., "FLT3/FLK2 Ligand Promotes the Growth of Murine Stem Cells and the Expansion of Colony-Forming Cells and Spleen Colony-Forming Units," *Blood* 85:2747-2755 (1995).

Ikebuchi et al., "Granulocyte colony-stimulating factor enhances interleukin 3-dependent proliferation of multipotential hemopoietic progenitors," *Proc. Natl. Acad. Sci. USA* 85:3445-3449 (1988).

Ito et al., "Development of a Novel Selective Amplifier Gene for Controllable Expansion of Transduced Hematopoietic Cells," *Blood* 90:3884-3892 (1997).

Karlsson, "Treatment of Genetic Defects in Hematopoietic Cell Function by Gene Transfer," *Blood* 78:2481-2492 (1991).

Littlewood et al., "A modified oestrogen receptor ligand-binding domain as an improved switch for the regulation of heterologous proteins," *Nucleic Acids Research* 23:1686-1690 (1995).

Medin et al., "A Bicistronic Therapeutic Retroviral Vector Enables Sorting of Transduced CD34⁺ Cells and Corrects the Enzyme Deficiency in Cells From Gaucher Patients," *Blood* 87:1754-1762 (1996).

Molineux et al., "The Effects on Hematopoiesis of Recombinant Stem Cell Factor (Ligand for *c-kit*) Administered In Vivo to Mice Either Alone or in Combination With Granulocyte Colony-Stimulating Factor," *Blood* 78:961-966 (1991).

Nagamune et al., "The development of artificial receptor-expressing cells capable of being switched by antigen-antibody reactions," *Pharmacia* 36(6):474-478 (2000).
(English translation attached).

Pawliuk et al., "Selection of Retrovirally Transduced Hematopoietic Cells Using CD24 as a Marker of Gene Transfer," *Blood* 84:2868-2877 (1994).

Picard et al., "A Movable and Regulable Inactivation Function within the Steroid Binding Domain of the Glucocorticoid Receptor," *Cell* 54:1073-1080 (1988).

Planelles et al., "A new reporter system for detection of retroviral infection," *Gene Therapy* 2:369-376 (1995).

Richardson et al., "Preselection of Transduced Murine Hematopoietic Stem Cell Populations Leads to Increased Long-Term Stability and Expression of the Human Multiple Drug Resistance Gene," *Blood* 86:2579-2589 (1995).

Rocmer et al., "Modulation of cell proliferation and gene expression by a p53-estrogen receptor hybrid protein," *Proc. Natl. Acad. Sci. USA* 90:9252-9256 (1993).

Romano et al., "Recent Advances, Prospects and Problems in Designing New Strategies for Oligonucleotide and Gene Delivery in Therapy," *in vivo* 12:59-68 (1998).

Sorrentino et al., "Selection of Drug-Resistant Bone Marrow Cells in Vivo After Retroviral Transfer of Human *MDR1*," *Science* 257:99-103 (1992).

Takebayashi et al., "Hormone-induced Apoptosis by Fas-Nuclear Receptor Fusion Proteins: Novel Biological Tools for Controlling Apoptosis *in Vivo*," *Cancer Research* 56:4164-4170 (1996).

Walsh et al., "A Functionally Active Retrovirus Vector for Gene Therapy in Fanconi Anemia Group C," *Blood* 84:453-459 (1994).

Welte et al., "Filgrastim (r-metHuG-CSF): The First 10 Years," *Blood* 88:1907-1929 (1996).

White et al., "Molecular Analysis of the Region of Distal 1p Commonly Deleted in Neuroblastoma," *European Journal of Cancer* 33:1957-1961 (1997).

Yoshikawa et al., "Distinct signal transduction through the tyrosine-containing domains of the granulocyte colony-stimulating factor receptor," *The EMBO Journal* 14:5288-5296 (1995).

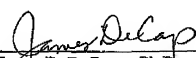
Submission of this statement is not a representation that a search has been made, nor is information included in this statement an admission that the information is material to patentability.

This statement is being filed with the application. Please apply any charges or credits to Deposit Account No. 03-2095.

Respectfully submitted,

Date:

13 July 2001


James D. DeCamp, Ph.D.
Reg. No. 43,580

Clark & Elbing LLP
176 Federal Street
Boston, MA 02110
Telephone: 617-428-0200
Facsimile: 617-428-7045



21559

PATENT, TRADEMARK OFFICE

FAX RECEIVED
AUG 27 2003
GROUP 1600

Sheet 1 of 3

SUBSTITUTE FORM PTO-1449 (MODIFIED)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		Attorney Docket No.		50026/012004	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		(37 C.F.R. §1.98(b))		Serial No.		To Be Assigned	
				Applicant		Kelya Ozawa	
				Filing Date		July 13, 2001	
				Group			
				IDS Filed		July 13, 2001	
U.S. PATENTS							
Examiner's Initials	Patent Number	Issue Date	Patentee	Class	Subclass	Filing Date (If Appropriate)	
FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION							
Examiner's Initials	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation (Yes/No)	
OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PLACE OF PUBLICATION)							
	Aki et al., "Identification and Characterization of Positive Regulatory Elements in the Human Glyceraldehyde 3-Phosphate Dehydrogenase Gene Promoter," J. Biochem. 122:271-278 (1997).						
	Avalos, "Molecular Analysis of the Granulocyte Colony-Stimulating Factor Receptor," Blood 88:781-777 (1996).						
	Berthois et al., "Phenol red in tissue culture media is a weak estrogen: Implications concerning the study of estrogen-responsive cells in culture," Proc. Natl. Acad. Sci. USA 83:2496-2500 (1986).						
	Blaese et al., "T Lymphocyte-Directed Gene Therapy for ADA-SCID: Initial Trial Results After 4 Years," Science 270:475-480 (1995).						
	Bordignon et al., "Gene Therapy in Peripheral Blood Lymphocytes and Bone Marrow for ADA-Immunodeficient Patients," Science 270:470-475 (1995).						
	Conneally et al., "Rapid and Efficient Selection of Human Hematopoietic Cells Expressing Murine Heat-Stable Antigen as an Indicator of Retroviral-Mediated Gene Transfer," Blood 87:456-464 (1996).						
	Danielian et al., "Identification of Residues in the Estrogen Receptor That Confer Differential Sensitivity to Estrogen and Hydroxytamoxifen," Molecular Endocrinology 7:232-240 (1993).						
	Dong et al., "Distinct Cytoplasmic Regions of the Human Granulocyte Colony-Stimulating Factor Receptor Involved in Induction of Proliferation and Maturation," Molecular and Cellular Biology 13:7774-7781 (1993).						
	Dunbar et al., "Gene Transfer into Hematopoietic Progenitor and Stem Cells: Progress and Problems," Stem Cells 12:563-576 (1994).						
	Fukunaga et al., "Growth and Differentiation Signals Mediated by Different Regions in the Cytoplasmic Domain of Granulocyte Colony-Stimulating Factor Receptor," Cell 74:1079-1087 (1993).						

EXAMINER

NAME AND ADDRESS

Sheet 2 of 3

SUBSTITUTE FORM PTO-1449 (MODIFIED)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	Attorney Docket No.	50026/012004
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		Serial No.	To Be Assigned
		Applicant	Keiya Ozawa
		Filing Date	July 13, 2001
		Group	
(37 C.F.R. §1.98(b))		IDS Filed	July 13, 2001
OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PLACE OF PUBLICATION)			
	Fukunaga et al., "Functional domains of the granulocyte colony-stimulating factor receptor," The EMBO Journal 10:2855-2865 (1991).		
	Fukunaga et al., "Purification and Characterization of the Receptor for Murine Granulocyte Colony-stimulating Factor," The Journal of Biological Chemistry 265:14008-14015 (1990).		
	Gabbianelli et al., "Multi-Level Effects of flt3 Ligand on Human Hematopoiesis: Expression of Putative Stem Cells and Proliferation of Granulomonocytic Progenitors/Monocytic Precursors," Blood 86:1661-1670 (1995).		
	Gossen et al., "Tight control of gene expression in mammalian cells by tetracycline-responsive promoters," Proc. Natl. Acad. Sci. USA 89:5547-5551 (1992).		
	Hanania et al., "Serial transplantation shows that early hematopoietic precursor cells are transduced by MDR-1 retroviral vector in a mouse gene therapy model," Cancer Gene Therapy 1:21-25 (1994).		
	Hanlu et al., "Extracellular Domain of Granulocyte-Colony Stimulating Factor Receptor," Archives of Biochemistry and Biophysics 324:344-356 (1995).		
	Hockenbery et al., "Bcl-2 Functions in an Antioxidant Pathway to Prevent Apoptosis," Cell 75:241-251 (1993).		
	Hollenberg et al., "Use of a conditional MyoD transcription factor in studies of MyoD trans-activation and muscle determination," Proc. Natl. Acad. Sci. USA 90:8028-8032 (1993).		
	Hope et al., "trans-Dominant Inhibition of Human Immunodeficiency Virus Type 1 Rev Occurs through Formation of Inactive Protein Complexes," Journal of Virology 66:1849-1855 (1992).		
	Hudak et al., "FLT3/FLK2 Ligand Promotes the Growth of Murine Stem Cells and the Expansion of Colony-Forming Cells and Spleen Colony-Forming Units," Blood 85:2747-2755 (1995).		
	Ikebuchi et al., "Granulocyte colony-stimulating factor enhances interleukin 3-dependent proliferation of multipotential hemopoietic progenitors," Proc. Natl. Acad. Sci. USA 85:3445-3449 (1988).		
	Ito et al., "Development of a Novel Selective Amplifier Gene for Controllable Expansion of Transduced Hematopoietic Cells," Blood 90:3884-3892 (1997).		
	Karlsson, "Treatment of Genetic Defects in Hematopoietic Cell Function by Gene Transfer," Blood 78:2481-2492 (1991).		
	Littlewood et al., "A modified oestrogen receptor ligand-binding domain as an improved switch for the regulation of heterologous proteins," Nucleic Acids Research 23:1688-1690 (1995).		
	Luo et al., "Oligomerization activates c-Raf-1 through a Ras-dependent mechanism," Nature 383:181-185 (1996).		

DRAWING

Sheet 3 of 3

SUBSTITUTE FORM PTO-1449 (MODIFIED)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	Attorney Docket No.	50026/012004
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		Serial No.	To Be Assigned
		Applicant	Keiya Ozawa
		Filing Date	July 13, 2001
		Group	
(37 C.F.R. §1.98(b))		IDS Filed	July 13, 2001
OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PLACE OF PUBLICATION)			
	Medin et al., "A Bidistomic Therapeutic Retroviral Vector Enables Sorting of Transduced CD34+ Cells and Corrects the Enzyme Deficiency in Cells From Gaucher Patients," Blood 87:1754-1762 (1996).		
	Molineux et al., "The Effects on Hematopoiesis of Recombinant Stem Cell Factor (Ligand for c-kit) Administered In Vivo to Mice Either Alone or in Combination With Granulocyte Colony-Stimulating Factor," Blood 78:961-966 (1991).		
	Nagamune et al., "The development of artificial receptor-expressing cells capable of being switched by antigen-antibody reactions," Pharmacia 36(5):474-478 (2000). (English translation attached).		
	Pawluk et al., "Selection of Retrovirally Transduced Hematopoietic Cells Using CD24 as a Marker of Gene Transfer," Blood 84:2868-2877 (1994).		
	Picard et al., "A Movable and Regulable Inactivation Function within the Steroid Binding Domain of the Glucocorticoid Receptor," Cell 54:1073-1080 (1989).		
	Planells et al., "A new reporter system for detection of retroviral infection," Gene Therapy 2:369-378 (1995).		
	Richardson et al., "Preselection of Transduced Murine Hematopoietic Stem Cell Populations Leads to Increased Long-Term Stability and Expression of the Human Multiple Drug Resistance Gene," Blood 86:2579-2589 (1995).		
	Roemer et al., "Modulation of cell proliferation and gene expression by a p53-estrogen receptor hybrid protein," Proc. Natl. Acad. Sci. USA 90:9252-9256 (1993).		
	Romano et al., "Recent Advances, Prospects and Problems in Designing New Strategies for Oligonucleotide and Gene Delivery in Therapy," in vivo 12:59-68 (1998).		
	Sorrentino et al., "Selection of Drug-Resistant Bone Marrow Cells In Vivo After Retroviral Transfer of Human MDR1," Science 257:99-103 (1992).		
	Takebayashi et al., "Hormone-Induced Apoptosis by Fas-Nuclear Receptor Fusion Proteins: Novel Biological Tools for Controlling Apoptosis In Vivo," Cancer Research 55:4164-4170 (1995).		
	Tong et al., "In Vivo Administration of Recombinant Methionyl Human Stem Cell Factor Expands the Number of Human Marrow Hematopoietic Stem Cells," Blood 82:784-791 (1993).		
	Walsh et al., "A Functionally Active Retrovirus Vector for Gene Therapy in Fanconi Anemia Group C," Blood 84:453-459 (1994).		
	Welte et al., "Filgrastim (r-metHuG-CSF): The First 10 Years," Blood 88:1907-1929 (1996).		
	White et al., "Molecular Analysis of the Region of Distal 1p Commonly Deleted in Neuroblastoma," European Journal of Cancer 33:1957-1961 (1997).		
	Yoshikawa et al., "Distal distal trans-		